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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,580	03/31/2001	Joshua T. Goodman	1018.119US1	6816

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EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

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Please find below and/or attached an Office communication concerning this application or proceeding.

DT

Office Action Summary	Application No. 09/823,580	Applicant(s) GOODMAN ET AL.	
	Examiner James S. Wozniak	Art Unit 2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. **Claims 1-33** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-44 of copending Application No. 09/823,619 in view of Skiena et al (*U.S. Patent: 5,828,991*) and Bangalore et al

Art Unit: 2655

(*U.S. Patent: 6,415,248*). Skiena teaches the additional use of context information and machine learning to provide a more accurate text disambiguation method (*Col. 9, Line 35- Col. 10, Line 27, and Fig. 7*), while Bangalore teaches the additional steps of smoothing and pruning a language model for memory conservation in producing a compressed language model (*Col. 6, Lines 44-65*).

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-3, 5-9, 11, and 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Gilai et al (*U.S. Patent: 6,018,736*).

With respect to **Claim 1**, Gilai discloses:

For an entered key input, finding one or more potential words from a dictionary of words, where each potential word has a cost between the entered key input and an input key sequence corresponding to the potential word less than or equal to a maximum cost (*Col. 7, Lines 10-31*); and

Presenting at least one of the one or more potential words as the intended word (*Col. 8, Lines 1-33*).

With respect to **Claim 2**, Gilai recites:

The reduced keypad is a numeric keypad (*Col. 10, Lines 23-29*).

With respect to **Claim 3**, Gilai recites:

Receiving the entered key input (*Col. 6, Lines 58-60*).

With respect to **Claim 5**, Gilai discloses:

For each word in the dictionary of words, determining the cost between the entered key sequence and the key sequence corresponding to the word (*Col. 7, Lines 10-17*); and

Adding the word to the one or more potential words in response to determining that the cost is less than or equal to the maximum cost (*Col. 7, Lines 10-17*).

With respect to **Claim 6**, Gilai recites:

Recursively determining the cost until one of a first condition and a second condition is met, where the first condition is the cost is so far greater than the maximum cost, and the second condition is the cost has been completely determined as less than or equal to the maximum cost (*Col. 11, Line 60- Col. 12, Line 60, and Fig. 2, Element 150*).

With respect to **Claim 7**, Gilai discloses:

Determining the cost between the entered key input sequence and the key sequence corresponding to the word comprises employing a dynamic programming approach (*Col. 7, Lines 46-65*).

With respect to **Claim 8**, Gilai recites:

The cost between the entered key input and the input key sequence corresponding to the word is the minimum edit distance between the entered key input and the input key sequence corresponding to the word (*Col. 16, Lines 31-39*).

With respect to **Claim 9**, Gilai discloses:

The dictionary is stored as a tree (*Col. 9, Lines 24-32*).

With respect to **Claim 11**, Gilai recites:

The dictionary is a letter-based dictionary in which each word thereof is stored only by a constituent letter sequence corresponding to the word (*Col. 8, Lines 54-56*).

With respect to **Claim 12**, Gilai discloses:

The dictionary is a key-based dictionary in which each word thereof is stored by at least the key sequence corresponding to the word (*Col. 10, Lines 23-29*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 4 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al in view of Yu (*U.S. Patent: 6,556,841*).

With respect to **Claim 4**, Gilai teaches the method for finding and presenting most likely dictionary words corresponding to a key input, as applied to Claim 1. Gilai does not specifically suggest an initial dictionary lookup, which completes the aforementioned method if a text input is found in the dictionary, however Yu recites:

Determining a word corresponding to the entered key input as the intended word (*Col. 9, Lines 5-11*);

Determining whether the word determined is in the dictionary of words (*Col. 9, Lines 5-11*); and

Ending the method in response to determining that the word determined is in the dictionary of words (*entering an additional word or ending text input when a word is present in a dictionary, Fig. 8A, Element 806*).

Gilai and Yu are analogous art because they are from a similar field of endeavor in reduced keypad text input. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai with the initial dictionary lookup taught by Yu in order to provide a more efficient processing method for determining an intended text input by eliminating the added step of performing a most likely word search if an exact word match can be found.

With respect to **Claim 13**, Yu further discloses:

The method is performed by execution of a computer program by a processor from a computer-readable medium (*Col. 2, Lines 64-66*).

7. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al in view of Schabes et al (*U.S. Patent: 5,610,812*).

With respect to **Claim 10**, Gilai teaches the method for finding and presenting most likely dictionary words corresponding to a key input, as applied to Claim 1. Gilai does not

specifically suggest that the dictionary is stored as a DAG model, however Schabes teaches such a configuration (*Col. 9, Lines 43-47*).

Gilai and Schabes are analogous art because they are from a similar field of endeavor in text lookup utilizing a dictionary. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai with the dictionary embodiment as a DAG model as taught by Schabes in order to implement an efficient dictionary lookup method regardless of dictionary size.

8. **Claims 14-27, 29, and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al in view of Skiena et al (*U.S. Patent: 5,828,991*).

With respect **Claim 14**, Gilai teaches the method for processing a numeric text input that is capable of determining potential words from a dictionary that match the input, wherein each word has an associated cost, as applied to Claim 1. Gilai further teaches the use of word-probability pairs (*Col. 7, Lines 29-31*). Gilai does not specifically suggest that an input has a left context that is used to determine a probability score, however Skiena teaches the use of disambiguating a text input from a numeric keypad using word positioning, which would inherently include a left context (*Col. 5, Lines 1-55*).

Gilai and Skiena are analogous art because they are from a similar field of endeavor in reduced keypad text input. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai with the use of context data in determining a most probable input word as taught by Skiena in order to improve text processing

for a numerical sequence which corresponds to multiple words through the use of contextual information (*Skiena, Col. 2, Lines 18-49*).

With respect to **Claim 15**, Gilai further recites:

The reduced keypad is a numeric keypad (*Col. 10, Lines 23-29*).

With respect to **Claim 16**, Gilai additionally discloses:

Sorting the array of word-probability pairs in decreasing order of probability (*Col. 7, Lines 22-31*); and

Determining the word corresponding to the key input as a word of a first word-probability pair within the array of word-probability pairs (*Col. 8, Lines 1-9*).

With respect to **Claim 17**, Gilai teaches the temporary list of word probability pairs as applied to Claim 16, while Skiena teaches the use of context information in word disambiguation as applied to Claim 14.

With respect to **Claim 18**, Skiena teaches the use of context information in word disambiguation as applied to Claim 14, while Gilai additionally discloses:

For each word in the vocabulary that is consistent with the key input as an initial part of the word, determining a probability of the word, and, upon determining that the probability is greater than a greatest probability so far determined, setting the greatest probability to the probability and a greatest probability word associated with the greatest probability to the word (*Col. 7, Lines 46-56, and Col. 15, Line 54- Col. 16, Line 4*);

Upon determining that the greatest probability is at least a number of times greater than a word of a first word-probability pair of the array of word probability-pairs, adding the greatest

probability word associated with the greatest probability and the greatest probability a new first word-probability pair to the array (*Col. 15, Line 54- Col. 16, Line 4, and Col. 8, Lines 1-9*).

With respect to **Claim 19**, Skiena teaches the use of context information in word disambiguation as applied to Claim 14, while Gilai teaches the method of Claim 18. Also, Gilai teaches the use of a best candidates box (*Fig. 1, Element 94*).

With respect to **Claim 20**, Gilai discloses:

Finding one or more additional potential words from the dictionary, where each additional potential word has a cost between the entered key input and a prefix of a key sequence corresponding to the potential word less than or equal to a maximum cost (*Col. 7, Lines 10-31*);

Determining a probability of each potential additional word, and upon determining that the probability is greater than the greatest probability so far determined, setting the greatest probability to the probability of the potential additional word and the greatest probability word associated with the greatest probability to the potential additional word (*Col. 15, Line 54- Col. 16, Line 4, and Col. 8, Lines 1-9*).

With respect to **Claim 21**, Gilai in view of Skiena teaches the apparatus for processing a numeric text input that is capable of determining potential words from a dictionary that match the input utilizing context information, wherein each word has an associated cost, as applied to Claim 14. Gilai in view of Skiena does not specifically suggest utilizing a small word penalty, however, the examiner takes official notice that it would have been obvious to associate a small word penalty with probability since small words have less letters and more letter combination possibilities, and thus would require more accurate spelling correction. Thus, in order to ensure small word correction accuracy, it would have been obvious to one of ordinary skill in the art, at

the time of invention, to modify the teachings of Gilai in view of Skiena with a small word penalty with a word probability calculation.

With respect to **Claim 22**, Gilai in view of Skiena teaches the apparatus for processing a numeric text input that is capable of determining potential words from a dictionary that match the input utilizing context information, wherein each word has an associated cost, as applied to Claim 14. Gilai in view of Skiena does not specifically suggest a last letter insertion/deletion penalty, however, the examiner takes official notice that it would have been obvious to associate an insertion/deletion with probability since added characters to a recognized dictionary word would likely be in error, and thus, assessed a great probability for error in final word determination. Thus, in order to ensure accurate word correction in the case of an additional and errant key entry, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena with a last letter insertion/deletion penalty.

Claim 23 contains subject matter similar to Claim 8, and thus, is rejected for the same reasons.

Claim 24, contains subject matter similar to Claim 14, and thus, is rejected for the same reasons.

Claim 25 contains subject matter similar to Claim 1, and thus, is rejected for the same reasons.

With respect to **Claim 26**, Skiena teaches the use of context information in determining a most probable input word as applied to Claim 14. Skiena further teaches that the invention can

be implemented using a well-known neural network (*Col. 9, Lines 47-50*) in order to provide a more adaptive word disambiguation method.

With respect to **Claim 27**, Gilai further recites:

The spell-checking logic is part of the word-determining logic (*Col. 7, Lines 22-31*).

With respect to **Claim 29**, Gilai additionally discloses:

The apparatus is a telephone (*Col. 6, Lines 58-60*).

With respect to **Claim 31**, Gilai additionally discloses:

The apparatus is a corded telephone (*Fig. 9, Element 715*).

9. **Claims 28, 30 and 32-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al in view of Skiena et al, and further in view of Yu.

With respect to **Claim 28**, Gilai in view of Skiena teaches the apparatus for processing a numeric text input that is capable of determining potential words from a dictionary that match the input utilizing context information, wherein each word has an associated cost, as applied to Claim 24. Gilai in view of Skiena does not specifically suggest displaying the context information and the ambiguous word; however, Yu shows such a configuration in Fig. 4.

Gilai, Skiena, and Yu are analogous art because they are from a similar field of endeavor in reduced keypad text input. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena with the means of displaying context information and an ambiguous word as taught by Yu in order to provide a user with a visual means of determining if an ambiguous word requires correction.

With respect to **Claims 30**, Gilai in view of Skiena teaches the apparatus for processing a numeric text input that is capable of determining potential words from a dictionary that match the input utilizing context information, wherein each word has an associated cost, as applied to Claim 24. Gilai in view of Skiena does not specifically suggest that the apparatus is a mobile telephone, however Yu discloses:

The apparatus is a mobile telephone (*Fig. 1*).

Gilai, Skiena, and Yu are analogous art because they are from a similar field of endeavor in reduced keypad text input. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena with the apparatus embodiment as a mobile phone as taught by Yu to implement a portable means of text processing.

With respect to **Claim 32**, Yu further discloses:

The apparatus is a personal-digital assistance (PDA) device (*Col. 2, Lines 60-63*).

With respect to **Claim 33**, Yu teaches the computer readable medium as applied to Claim 13.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Golding et al (*U.S. Patent: 5,956,739*)- teaches a method for context sensitive text correction.


- Connolly et al (*U.S. Patent: 6,005,495*)- discloses a method for intelligent text entry using a numeric keypad.
- Flinchem et al (*U.S. Patent: 6,307,548*)- teaches a means of character disambiguation based on context.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (703) 305-8669 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached at (703) 305-4827. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak
10/21/2004


SUSAN MCFADDEN
PRIMARY EXAMINER